

Chapter 25 Beyond Our Solar System

Section 25.1 Properties of Stars


This section describes the characteristics of stars, explains how astronomers measure distances to stars, and describes the Hertzsprung-Russell diagram.


Reading Strategy

Before you read, write two questions about the Hertzsprung-Russell diagram on page 704. As you read, write answers to your questions. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.


Questions About the Hertzsprung-Russell Diagram	
Question	Answer
a.	b.
c.	d.

Characteristics of Stars

- List three properties of stars. _____
-  Is the following sentence true or false? A star's color can tell you what its approximate temperature is. _____
- What are binary stars? _____

-  Binary stars can be used to determine the _____ of a star.

Measuring Distances to Stars

- The apparent change in position of a star when seen from opposite sides of Earth's orbit is called _____.
-  Circle the letter of each statement that is true.
 - Nearby stars have large parallax angles.
 - Nearby stars have larger parallax angles than distant stars have.
 - All stars have measurable parallax angles.
 - The parallax angles of distant stars are too small to measure.
- Is the following sentence true or false? Astronomers have calculated the parallax angles of millions of stars. _____
- What is a light-year? _____

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Stellar Brightness


9.  List three factors that control the apparent brightness of a star as seen from Earth. _____

10. Is the following sentence true or false? A third-magnitude star is ten times as bright as a fourth-magnitude star.

Match each definition to its term.

- | Definition | Term |
|--|-----------------------|
| _____ 11. a star's brightness as it appears from Earth | a. absolute magnitude |
| _____ 12. how bright a star actually is | b. apparent magnitude |
| 13. The star Arcturus has a much greater absolute magnitude than the sun but a much lower apparent magnitude. Why is this? _____ | |
| _____ | |
| _____ | |

Hertzsprung-Russell Diagram

14.  Circle the letter of what a Hertzsprung-Russell diagram shows.
- the location of stars in the sky
 - the absolute magnitude and temperature of stars
 - the apparent magnitude and temperature of stars
 - the absolute magnitude and mass of stars
15. About _____ percent of stars are main-sequence stars.
16. Select the appropriate letter in the figure that identifies each of the following features.

- _____ the sun
- _____ cool, small, red stars
- _____ white dwarfs (small faint stars)
- _____ red giants (bright cool stars)
- _____ hot, large, blue stars

Idealized Hertzsprung-Russell Diagram

